

REMARKS/ARGUMENTS

In light of the Examiner's FINAL restriction requirements, claims 1-26 have been canceled. New claims 27-33 are currently pending. Claims 27-33 are directed to Group VIII: a method of manipulating metabolism comprising expression of a combination of enzymes involved in A-CoA metabolism wherein combination of said enzymes is PanK, ATF, and PDH. The Applicants reserve the right to pursue non-elected inventions in subsequent applications.

Indefiniteness Corrected

The Examiner has rejected claims 1, 3, and 4 as indefinite. Claims 27-34 are directed to cells comprising expression of PanK, PDH and ATF to increase CoA production. Increased CoA production is used to increase bacterial products, such as isoamyl alcohol. The claims are supported by the specification on pages 9-10 in Table 2, as well as Examples 10-12.

PanC and PanD Described

The Examiner has rejected claim 1 as introducing new matter. Although claim 1 has been canceled, Applicants respectfully disagree. PanC and PanD are described in FIG. 2 and are known to one of ordinary skill in the art.

Written Description Requirement for Enzymes

The Examiner has rejected claims 1, 3, and 4 for insufficient written description. Applicants respectfully disagree. Functional enzymes are described that are already well known to one of ordinary skill in the art. Given the enzyme name, one of ordinary skill in the art can search gene databases to identify genes encoding same. The enzymes also have an associated activity, i.e. PanK is a pantothenate kinase, and must function as a pantothenate kinase. Therefore given the enzyme name and activity required, sufficient written description is given.

San (2002) is not §102(b) prior art

The Examiner has rejected claims 1 and 3 as anticipated by San (2002). Although claims 1 and 3 have been canceled, Applicants respectfully disagree. San is not §102(b) prior art because this application claims priority to provisional applications 60/457,093 filed March 24,

2003 and 60/457,635 filed March 26, 2003. San, et al. "Metabolic Engineering through Cofactor Manipulation and Its Effects on Metabolic Flux Redistribution in *Escherichia coli*, Metabolic Engineering, Vol. 4, pages 182-192 was published April, 2002 (The electronic version was not available until 16 May 2002) and is less than one year prior. Thus, San is not 102(b) art.

Rock (2002) does not teach "bacterial cells" or " $\Delta ackA$ -pta"

The Examiner has rejected claims 1 and 3 as anticipated by Rock (2000). Although claims 1 and 3 have been canceled, Applicants respectfully disagree. Rock teaches that expression of murine PanK in COS-7 cells (a hamster cell line). Rock does not teach "bacterial cells" engineered to increase CoA production through expression of recombinant proteins (PanK, PDH and ATF).

Use CoA flux to increase secondary metabolite was not obvious

The Examiner has rejected claim 4 as obvious in light of San (2002) and Rock (2000). Although claim 4 has been canceled, Applicants respectfully disagree. San was not published until April, 2002 and is the work of the present inventor. Rock does not provide all elements of the current claims. Rock does not teach "bacterial cells" engineered to increase CoA production through expression of recombinant proteins (PanK, PDH and ATF).

CONCLUSIONS

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. Extension for response within first month and fees are enclosed herein. However, should there be any additional fees required, please charge additional fees and credit any overpayment to Deposit Account No. 50-3420 (reference 31175413-005002 MDB)

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Respectfully submitted,

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